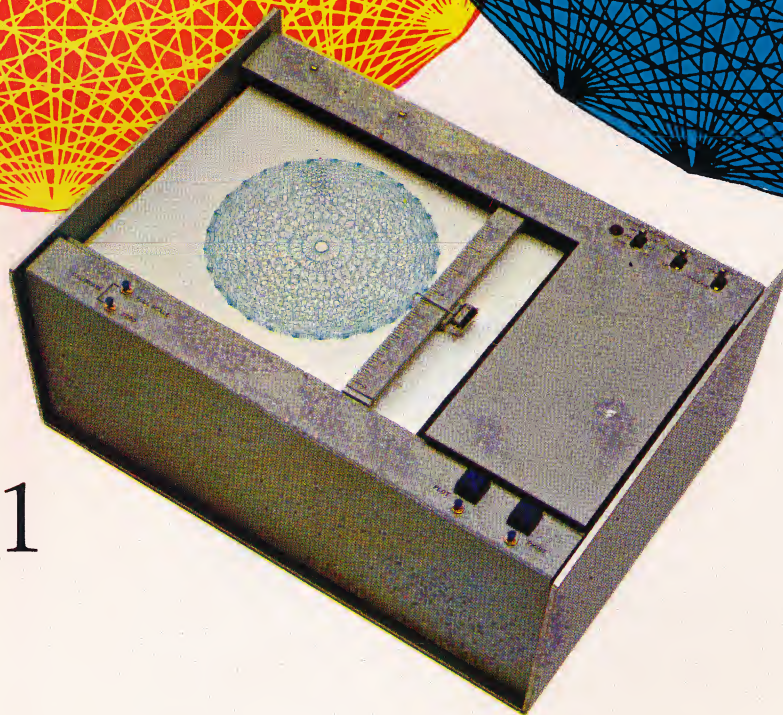
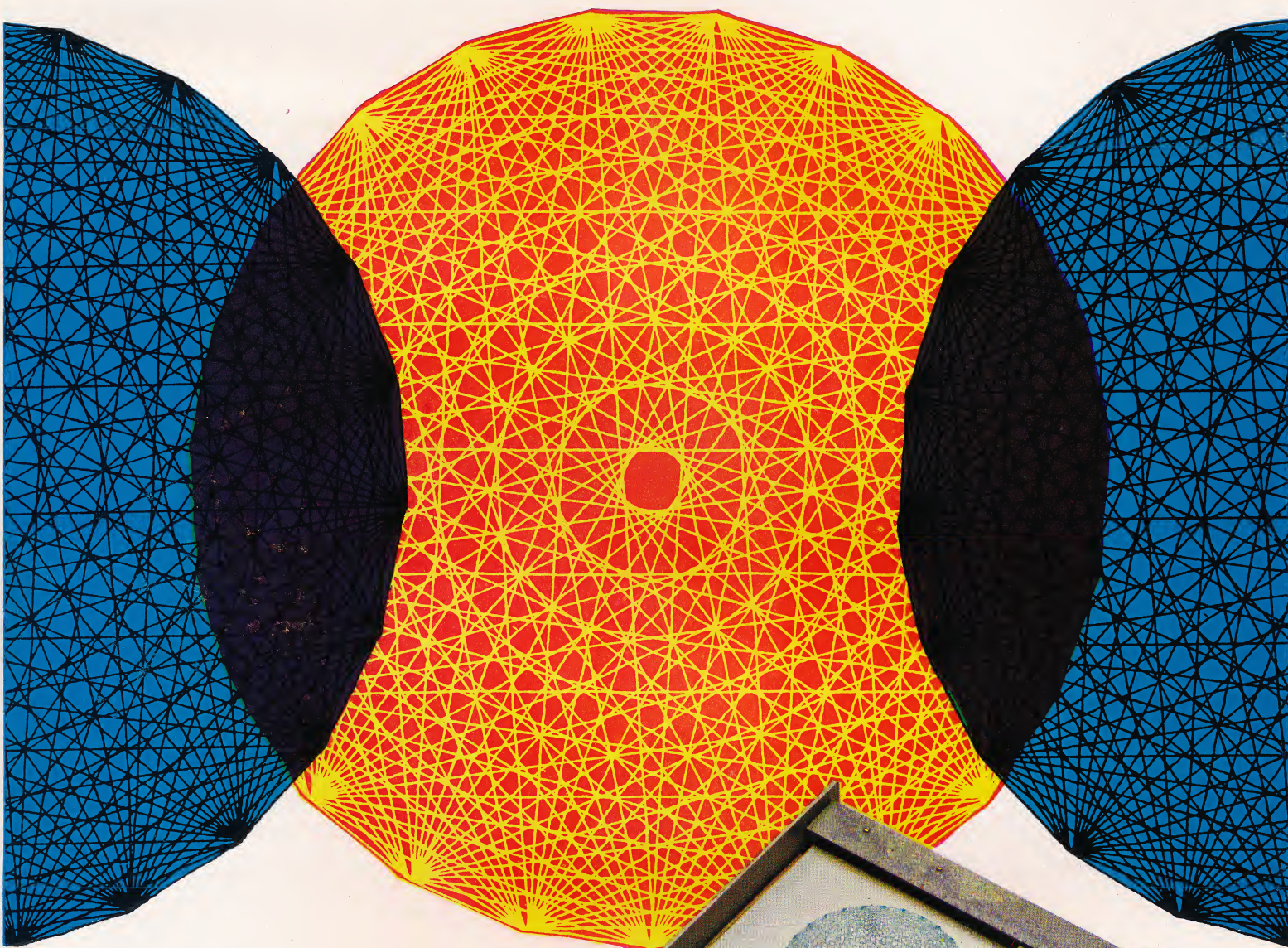




TIMESHARE DEVICES, INC.

225 Crescent Street, Waltham, Massachusetts 02154 ■ (617) 899-3560



model C/P 701

portable controller/plotter
for time-sharing computers

Controller/Plotter model C/P701 . . . a portable controller/plotter for high speed graphic plotting . . . drastically reduces computer processing time.

FEATURES

- ☐ Compatible with almost any time-sharing system
- ☐ High speed digital plotting in continuous graphic form
- ☐ Cost-saving, reduces computer time by a factor of 20
- ☐ Runs on-line or off-line from paper tape
- ☐ Oscilloscope or TV output connector on every unit
- ☐ Controller and plotter in a single integrated package
- ☐ Portable, compact — for desk top operation
- ☐ Single cable connection to computer terminal
- ☐ Simple installation and operation by non-technical personnel
- ☐ Flexible — plotter may be used independently
- ☐ Integrated circuitry and solid state reliability
- ☐ Attractive design fits business decor
- ☐ Easy to maintain

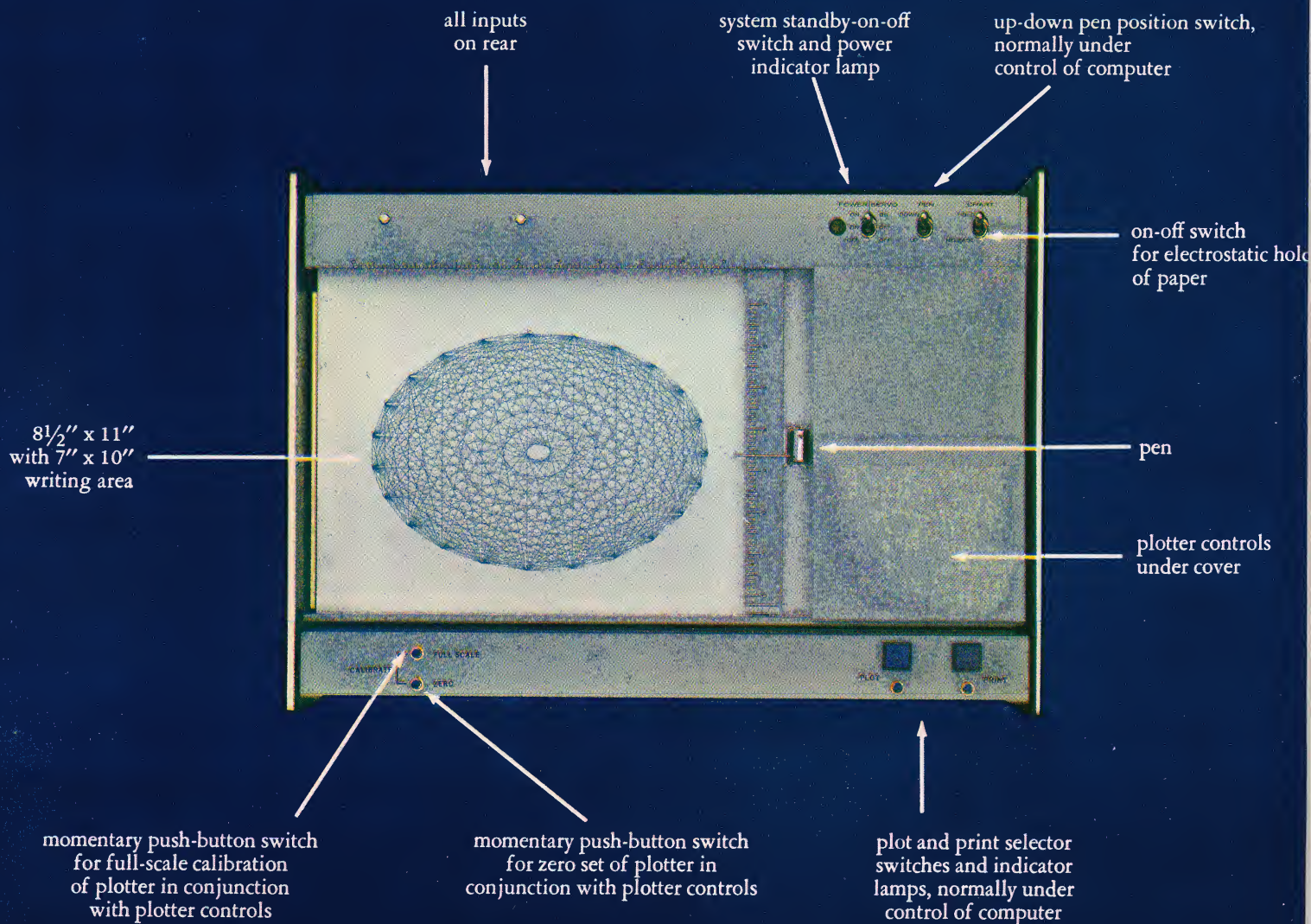


Some uses of the model C/P701 . . .

- *graphic computer output*
- *interactive graphic display*
- *teaching aid for the classroom*
- *engineering analysis tool*
- *stock market trend analysis and indication*
- *medical analysis applications*
- *. . . and many more*

Unless a calculation produces only a few numbers, the summary is best displayed on a graph or chart. In most cases computer calculations turn out long tables of numbers and a graph is far more meaningful. The laborious effort of manual plotting can be eliminated with Timeshare Devices model C/P 701, with which a table of numbers can now be graphed about five times as fast as it would take to merely print the numbers on a teletype. This five-fold improvement in computer output rate is a valuable method of decreasing the costs of computer terminal time.

The model C/P 701 Controller/Plotter is a complete interface-controller and analog recorder package that is easily connected to a terminal of a time-sharing computer. The controller continuously monitors the computer data and determines whether the data is to go to the terminal or to the plotter.



In the latter case the C/P 701 receives computer output information in digital form at the user's terminal and converts it to analog signals which are fed to the receiving elements in the X-Y recorder section. These elements produce X-Y motions which trace a continuous and permanent graphic plot on the recorder portion of the model C/P 701 Controller/Plotter.

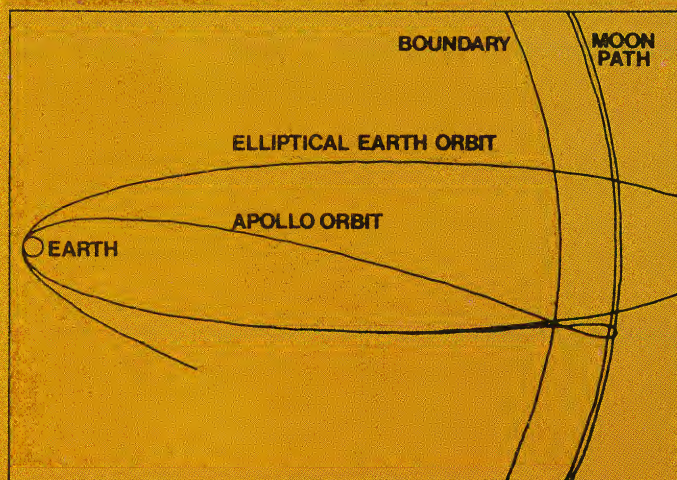
The model C/P 701 shares the same narrow bandwidth and economical telephone line by which the user's terminal is connected to the computer. Data is accepted and decoded without affecting normal operation of the terminal. The C/P 701 operates in conjunction with all DATA-PHONE or acoustic coupler adapters and standard teletypewriters. This permits (1) two-way communication with the computer and (2) program-controlled switching between plotter and teletype-

writer. Thus, the C/P 701 can be highly interactive with the user, who can request via teletype the precise functions he wishes the C/P 701 to perform. For example, data from an experiment can be typed into the computer and a graph outputted to the C/P 701. This technique extends high speed, economical computer graphics to remote stations of time-sharing computers.

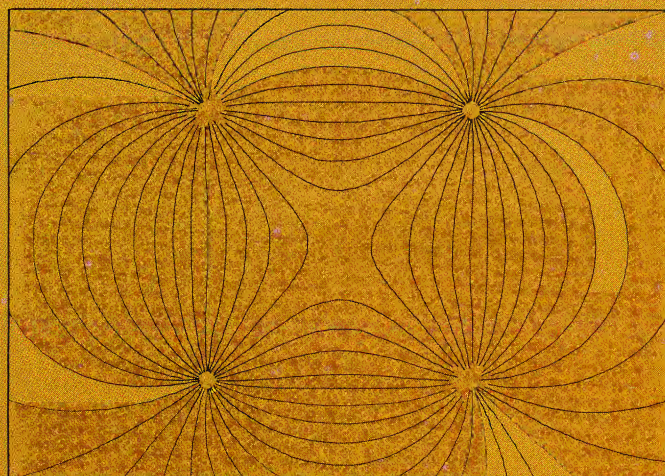
The software is a package of subroutines which are activated by the user's program and construct the properly formatted output data for handling by the model C/P 701 Controller/Plotter. The subroutines are available in BASIC and FORTRAN and utilize about a thousand words of storage. These thoroughly documented subroutines are easy to use and may be stored in the user's private library and/or in the memory of the time-sharing computer facility.

APPLICATIONS PERFORMED BY C/P 701 CONTROLLER/PLOTTER

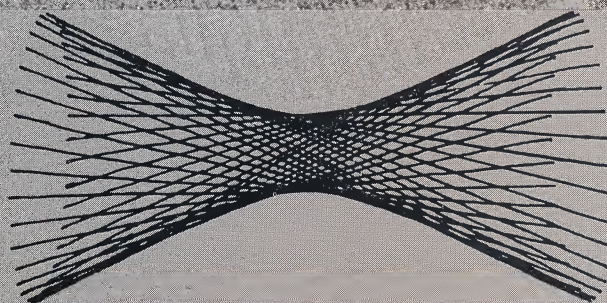
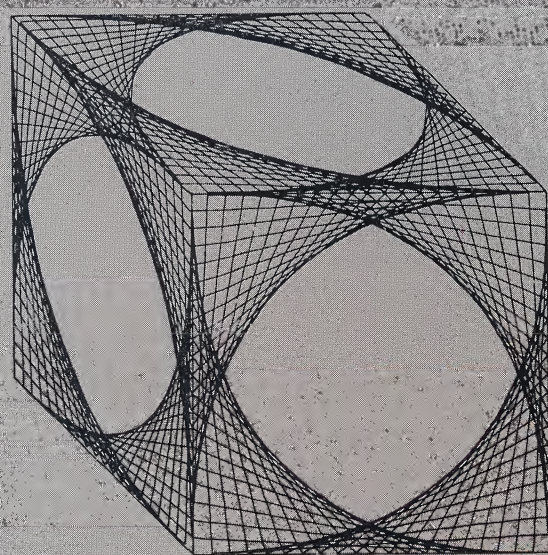
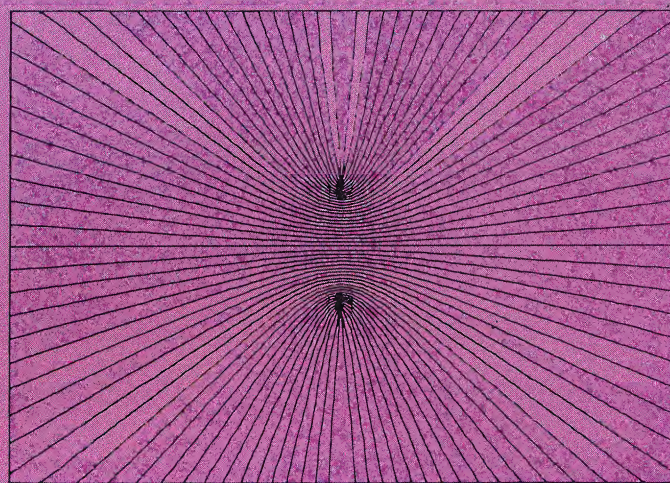
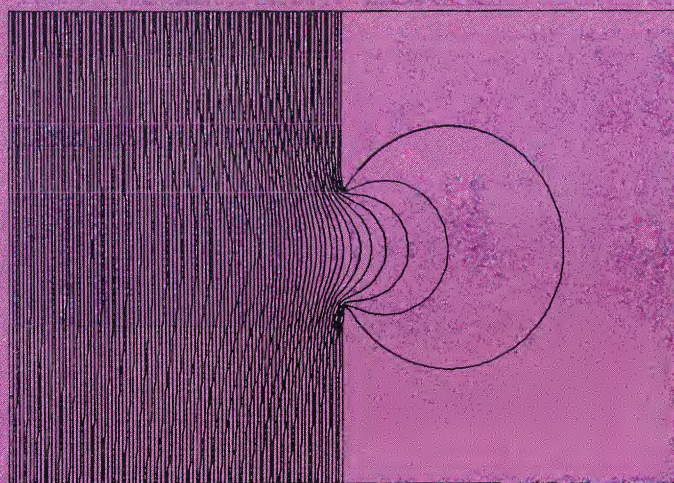
Apollo Trajectories



Example of Quadrupole Force Field



Examples of Fluid Flow through an Orifice



Examples of surface generation

ACTION REQUEST

Timeshare Devices, Inc. will be pleased to provide a solution to your specific Controller/Plotter requirements. To assist us, please fill out the information below.

Type of business_____

Computer system used_____

Number of terminals used_____

What type? ☐ Acoustic coupler (mfg)_____

☐ Hard wire (TTY or TWX)_____

Application_____

Software requirements (engineering, trends, special programming, etc.)_____

☐ I have a requirement for_____model C/P 701 Controller/Plotter(s).

☐ I would like a demonstration of the model C/P 701.

☐ I would like training of my personnel in use of the model C/P 701.

☐ I would like training of my personnel in programming of the model C/P 701.

Please have an Applications Engineer contact me

☐ immediately, ☐ in 3 months, ☐ in 6 months.

Name_____

Title_____

Company_____

Street_____

City_____State_____Zip_____

Telephone_____Ext._____

Others in my organization interested in information on the model C/P 701 Controller/Plotter.

Name_____

Title_____

Name_____

Title_____

☐ Please keep me on mailing list.

☐ Please delete me from mailing list.

FIRST CLASS

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WALTHAM, MASS.

BUSINESS REPLY MAIL

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TIMESHARE DEVICES, INC.
225 Crescent Street
Waltham, Massachusetts 02154

Please Fold and Staple Before Mailing

Please fill out the information requested on the reverse side of this card to enable our Applications Engineering Staff to provide you with a fast and effective response to your requirements.

DESIGN CHARACTERISTICS

Random Access X and Y coordinates are absolute, not incremental. Hence a single 3-character plot command can move the pen from any previous position to any new position in 0.3 sec. (Mechanical limitations of the pen recorder make it necessary to avoid long, straight-line, pen-down motions. In this system, dynamic linearity is preserved by software interpolation of intermediate points when lines longer than an inch are to be drawn.)

Bit-Error recovery — full Since coordinates are absolute, a transmission error affects only that plot command, not subsequent ones as would happen with incremental coding.

Software A variety of software packages in BASIC and FORTRAN are supplied with each unit. The simplest package has only two subroutine calls and takes up only 800 characters of disk storage.

System modifications required — usually none Any time-sharing system that permits the user to output arbitrary 7-bit ASCII characters requires no system modification. In many systems a library file consisting of all the ASCII characters is all that is needed. Any time-sharing system currently

either supporting an incremental plotter or capable of generating punch tape for numerical control machinery, requires no modification.

Special characters Almost all time-sharing systems use the 'delete' character (all bits on) as a fill character which may be inserted at random in the user's output string. Some systems use the 'null' character (all bits off) for the same purpose. The TDI controller ignores all deletes and nulls. In addition, the C/P 701 does not utilize ASCII control characters which might have undesired effects on the data communications provided by the control computer.

Ability to mix output to teletype with output to plotter Control logic in the TDI plotter directs data to devices on the basis of ASCII control characters. In plot mode the teletype is inactive. Since the 'carriage return' directs subsequent data to the teletype, all computer error messages are typed to prevent the error from being misinterpreted as plotter data and lost to the pen-recorder.

CRT display Output from the TDI system may be displayed on a storage oscilloscope or on ordinary TV receivers by means of a raster converter unit. The TDI controller provides an output connector for both these devices.

SPECIFICATIONS

ACCURACY

0.2% at full scale

LINEARITY

0.1% at full scale

RESOLUTION

10-bit D/A converters on both axes

SIZE

19½" W x 13" D x 8½" H

WEIGHT

30 lbs

POWER REQUIREMENTS

115VAC ± 10%, 1 amp, 60 Hz

PAPER HOLD-DOWN

electrostatic

PLOT AREA

7" x 10" (paper 8½" x 11"). Up to 30" x 30" on special order.

RACK MOUNTABLE

19½" W x 13" D x 8½" H

DATA FORMAT

Standard ASCII print-set. No ASCII control characters ever appear in plotter data. It takes three ASCII (7 bits) characters to convey information for each linear stroke of the pen.

SPEED

Each stroke of the pen requires 0.3 sec if data arrives at the 10 characters-per-second standard for Model 33 and 35 teletypes.

INTERFACE

The TDI Controller/Plotter model C/P 701 takes its input from a Western Electric 101C rental data set or any EIA RS-232B interface device. Interfaces to popular acoustic couplers are also available.



ABOUT THE COMPANY

The staff of Timeshare Devices, Inc. is comprised of experts in the time-sharing/peripherals realm whose academic research and development has been converted into sophisticated display systems, data line monitors and special interface equipment utilizing proprietary and patentable designs for maximum user accommodation.

ABOUT THE FRONT COVER —

This program defines a set of N points equally spaced around a circle. Then it draws all the line segments that connect each of those points to all the others. In the present program, the number of points must be a prime number, i.e. a number evenly divisible only by itself and unity. Examination of the plot shows how the lines group themselves into distinct "circles" of lines; the program itself works with these circles, drawing first the innermost circle and then the next one out, and so on. Each such circle consists of exactly N line segments, each connecting points which are an equal number of steps removed from one another.